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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,073

08/22/2003

David R. Shafer

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EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/646,073

Applicant(s)

SHAHER ET AL.

Examiner

Joshua L. Pritchett

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-99 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43-99 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to Amendment filed December 12, 2006 in which claims 43, 55, 65, 78 and 90 were amended as requested by applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 43-51, 53-74, 76-86 and 88-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer (US 2001/0040722) in view of Yonekubo (US 4,108,794).

Regarding claims 43, 46, 50-51, 53-55, 57, 59, 63, 65, 69, 73, 74, 76-78, 81, 85-86, 88-90, 92, 94 and 98, Shafer teaches an objective (fig. 3) constructed of a single glass material (page 6, section [0082]) for use with light energy having a wavelength in the range of approximately 157 nanometers through the infrared light range (page 6, section [0082]), comprising: at least one focusing lens (308) having diameter less than approximately 100 millimeters (fig. 3) receiving said light energy and transmitting focused light energy; at least one field lens (304 or 307) having diameter less than approximately 100 millimeters (fig. 3), receiving said focused light

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energy and transmitting intermediate light energy; and at least one Mangin mirror element (306), which is an optical element, having diameter less than 100 millimeters (fig. 3) receiving said intermediate light energy and providing controlled light energy to a specimen (309, not shown); wherein each focusing lens and each field lens is formed from a single glass material and aligned substantially along an axis, and further wherein the Mangin mirror element, the at least one focusing lens, and the at least one field lens are configured to balance aberrations therebetween, the aberration balancing reducing decenter sensitivity of the Mangin mirror element, the at least one focusing lens and the at least one field lens (para. 0096), wherein the objective is optimized to produce minimum spherical aberration, axial color, and chromatic variation of aberrations (page 7, sections [0083]-[0085]); wherein the at least one Mangin mirror element is optimized to produce spherical, axial color, and chromatic variation of aberrations to compensate for aberrations induced by the focusing lens group (page 6, section [0081]); wherein each lens used in the objective has a diameter of less than approximately 25 millimeters (fig. 3); wherein said objective is configured to provide broadband imaging while receiving light energy at wavelengths less than 400 nm (see at least the abstract); and wherein said at least one Mangin mirror element (306) comprises a single lens/mirror element comprising substantially curved concave surface (top surface in figure); and a second minimally curved surface (bottom surface in figure). Shafer states “the arrangement of Fig. 7 allow for improved design performance and relaxes manufacturing tolerances...decentering of any lens by 5 microns will cause less than one quarter wave of coma without any compensating elements.” Examiner takes “the arrangement” to be the same as “configured” and Shafer states “the arrangement” is used to reduce the error caused by decentering. Shafer lacks the controlled light energy going through an immersion

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substance to the specimen and wherein both surfaces of the single lens/mirror element are reflective with small central apertures through which light energy may pass. Yonekubo teaches using an immersion substance, including water and oil, to obtain better imaging performance (columns 1-2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a well known immersion substance with the objective of Shafer as taught by Yonekubo to provide better imaging performance because of reduced reflections due to the index matching provided by the immersion substance.

Regarding claims 49, 61-62, 72, 84 and 96-97, Shafer teaches in fig. 9 an objective for use with light energy having a wavelength in the range of approximately 157 nanometers through the infrared light range with field and focusing lenses and a Mangin mirror element less than approximately 100 millimeters (fig. 9) wherein only two glass materials are used (see table 5) comprising fused silica and calcium fluoride (see table 5). Shafer lacks the controlled light energy going through an immersion substance to the specimen and said Mangin mirror element receiving said intermediate light energy through a back/rear side thereof. Immersion substances, including water and oil are well known in the microscope/lithography art to obtain better imaging performance. Yonekubo teaches using an immersion substance, including water and oil, to obtain better imaging performance (columns 1-2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a well known immersion substance with the objective of Shafer as taught by Yonekubo to provide better imaging performance.

Regarding claims 58 and 93, Shafer teaches said objective (fig. 3) having a numerical aperture of greater than approximately 1.0 at the specimen (page 7, section [0085]).

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Regarding claims 44-45, 56, 66-68, 64, 79-80, 91 and 99, Shafer in view of Yonekubo as set forth above disclose the claimed invention except for wherein said objective has a field size of approximately 0.15 mm and a numerical aperture of approximately 1.2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make objective have a field size of approximately 0.15 mm and a numerical aperture of approximately 1.2, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would have been motivated to have the objective have a field size of approximately 0.15 mm and a numerical aperture of approximately 1.2 for the purpose of providing a larger field of view. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 47-48, 60, 70, 71, 82, 83 and 95, Shafer in view of Yonekubo as set forth above further disclose said objective having a long working distance used with a microscope (Shafer, figs. 1 and 2) having a flange (at 102 or 202) but is silent as to the location of the flange being approximately 45 millimeters from the specimen during normal operation or at least approximately 100 millimeters from the specimen during normal operation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the flange be approximately 45 millimeters from the specimen during normal operation or at least approximately 100 millimeters from the specimen during normal operation, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would have been motivated to have the flange be approximately 45 millimeters from the specimen during normal operation or at least approximately 100 millimeters from the specimen during normal operation for the purpose of having an appropriate working

area for interacting with/changing the specimen. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 52, 75 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer et al. in view of Yonekubo as applied to claims 43, 66 and 78 above and further in view Deutsch et al., WO 01/57563 A2.

Shafer in view of Yonekubo as applied to claims 43 and 78 above disclose the claimed invention except for the immersion substance being a silicone gel. Deutsch teaches using a silicone gel as an immersion substance (page 2, lines 18-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the immersion substance of Shafer in combination with Yonekubo be a silicone gel as suggested by Deutsch et al. to provide more controllable flow characteristics to the immersion substance

Response to Arguments

Applicant's arguments filed December 12, 2006 have been fully considered but they are not persuasive.

Applicant argues the prior art reference fail to provide a motivation to combine. The MPEP states in section 2142 under the heading Establishing a Prima Facie Case of Obviousness, "motivation, either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art." The motivation to combine the references above is from the knowledge of one of ordinary skill in the art.

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Applicant argues one would not be motivated to combine Shafter and Yonekubo based on the references themselves. It is extremely well known in the art of microscopes to use an immersion liquid to reduce reflections at the objective/air and air/sample interfaces. As stated above the motivation may come from the knowledge of one of ordinary skill in the art. Examiner points out the claim language only requires the presence of the immersion liquid. If the applicant intends to claim the immersion liquid contacting the Mangin mirror that limitation must be added into the claim language.

Applicant argues the Allan reference is not properly combined. This argument is moot since the Allan reference has been removed from the rejection as seen above.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant argues the reduction of reflections at the interfaces is not a motivation but a result. The motivation to combine is to achieve the result stated in the rejection above.

Conclusion

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

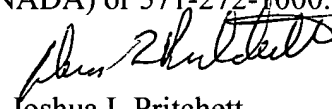
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joshua L Pritchett
Examiner
Art Unit 2872



DREW A. DUNN
SUPERVISORY PATENT EXAMINER